REMARKS

Reconsideration and allowance of the claims are requested in view of the above amendments and the following remarks. Claims 1-5, 8-9, 11-12, 16-17, 20-21, 23-27, 30-31, 33-34, 38-39, 42-43, 45-46, 49-54 and 57-61 have been amended. Support for the amendments may be found in the specification and claims as originally filed. For example, support for the claim amendments may be found in the specification at least at page 16, line 3 – page 18, line 13; original claims 6, 7, 11 and 15; and Figure 4. No new matter has been added. Claims 6-7, 15, 28-29 and 37 have been canceled without prejudice or disclaimer.

Upon entry of this amendment, claims 1-5, 8-14, 16-27, 30-36, 38-48, 49-56 and 57-61 will be pending in the present application, with claims 1, 23, 45, 46 and 54 being independent.

1. Objections to Specification

The Office Action objects to the specification and requires applicants to update the status of U.S. Patent Application 10/191,822. The specification has been amended as required by the Office Action.

For at least the reasons above, reconsideration and withdrawal of the objections to the specification are respectfully requested.

2. Rejections Under 35 U.S.C. §112

Claims 1-61 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter of the invention. Specifically, the Office Action on pages 4-7 indicates numerous issues in the claims with respect to 35 U.S.C. 112, second paragraph.

Applicants have amended the claims in effort to provide further clarity and to sufficiently address the issues outlined in the Office Action with respect to the rejection of the claims under

35 U.S.C. 112, second paragraph. If it is believed that any issues remain after the present claim amendments have been considered, the Examiner is invited to contact applicants' representative directly to discuss any necessary amendments to the claims.

Since claims 6-7, 15, 28-29 and 37 have been canceled, the rejection of these claims is rendered moot.

For at least the reasons above, reconsideration and withdrawal of the rejection of claims 1-61 under 35 U.S.C. §112 are respectfully requested.

3. Rejections Under 35 U.S.C. §101

Claims 1-61 are rejected under 35 U.S.C. 101 because invention is directed to non statutory subject matter. Applicants respectfully traverse this rejection for at least the following reasons.

The Office Action on pages 9-15 asserts that independent claims 1, 23, 45, 46 and 54 are directed to abstract ideas, do not have a practical application, and do not produce a useful, concrete and tangible result. Additionally, the Office Action asserts that claims 1, 23, 45, 46 and 54 do not specify that the result of the claims is stored, or output or displayed to a user, or otherwise used in the real world.

Although applicants disagree with the above assertions, for purposes of economy of prosecution, independent claims 1, 23, 45, 46 and 54 have been amended to overcome the rejections of these claims under 35 U.S.C. 101. For example, claim 1 has been amended to recite:

> A computer implemented method for approximating a number of tuples returned by a database query to optimize queries on a computerized database that comprises a set of predicates that each reference a set of database tables, the method comprising the steps of:
>
> . . .
>
> f) storing in memory either the second or third estimated selectivity value of the query based on whether the query

is separable. (emphasis added)

Therefore, claim 1 is clearly directed to a practical real-world use, and produces a useful, concrete and tangible result. Consequently, claim 1, and the claims dependent thereon, are directed to statutory subject matter. The amendments to claim 1 overcoming the rejections under 35 U.S.C. 101 may be found in the specification and claims as originally filed, such as, for example, page 1, lines 4-5; page 7, lines 13-17; page 3, line 17 – page 6, line 18; Figures 1 and 2; and original claim 6.

Independent claims 23, 45, 46 and 54 have been amended to include similar elements as in claim 1 to overcome the rejections under 35 U.S.C. 101. Therefore, claims 23, 45, 46 and 54, and their respective dependent claims, are also directed to statutory subject matter.

Since claims 6-7, 15, 28-29 and 37 have been canceled, the rejection of these claims is rendered moot.

For at least the reasons above, reconsideration and withdrawal of the rejection of claims 1-61 under 35 U.S.C. §101 are respectfully requested.

4. Rejections Under 35 U.S.C. §102

Claims 1-18, 22-40, 44-61 are rejected under 35 U.S.C. 102(b) as being anticipated by Nicolas Bruno (hereinafter Bruno) "Automatic management of statistics on Query expressions in relational databases". Applicants respectfully traverse this rejection for at least the following reasons.

The Office Action on page 21 asserts that Bruno discloses "storing the estimated selectivity of the query obtained in step f) in memory" (citing page 7, lines 5-11). In the section cited by the Office Action, Bruno discloses using a propagated histogram to estimate selectivity values. It appears that the Office Action considers that the estimation of the selectivity values in Bruno inherently requires that the selectivity values be stored in memory for at least a temporary period of time. However, Bruno fails to disclose or suggest, at the section cited by the Office

Action or elsewhere, the elements of storing in memory either a second or third estimated selectivity value of the query based on whether the query is separable, as included, in some form, in independent claims 1, 23, 45, 46 and 54.

Additionally, the Office Action on page 21 asserts that Bruno discloses "estimated selectivity is stored for a query and returning that value to approximate the number of tuples returned by the query" (citing page 7, lines 14-17). In the section cited by the Office Action, Bruno discloses estimating the cardinality of the original query plan. Again, it appears that the Office Action considers that it is inherently required in Bruno that estimated cardinality values be stored in memory for at least a temporary period of time. However, Bruno fails to disclose or suggest, at the section cited by the Office Action or elsewhere, the elements of determining whether a first estimated selectivity value of the query is stored and returning the stored first estimated selectivity value to approximate the number of tuples returned by the query, as included, in some form, in independent claims 1, 23 and 45.

Furthermore, the Office Action on page 23 asserts that Bruno discloses "decomposing the query selectivity and matching the conditional selectivity expressions are repeated to generate alternative products and wherein one of those products is selected to estimate the selectivity of the query" (citing page 15, lines 14-16; page 16, lines 5-10). In the sections cited by the Office Action, Bruno discloses a five way join where each edge represents a join predicate between two tables (see page 15, lines 6-16; Figure 4.2). However, Bruno fails to disclose or suggest, at the sections cited by the Office Action or elsewhere, the elements of atomically decomposing the query selectivity to form a product that comprises a conditional selectivity expression, wherein the atomically decomposing step is repeated to produce a plurality of alternative products that comprise corresponding conditional selectivity expressions; for each of the plurality of alternative products, matching a corresponding conditional selectivity expression with stored statistics to obtain statistics that can estimate a selectivity value of the conditional selectivity expression and using the statistics to obtain an estimated selectivity value of the conditional

selectivity expression; and combining the estimated selectivity values of the conditional selectivity expressions corresponding to each alternative product to determine a third estimated selectivity value of the query, as included, in some form, in independent claims 1, 23, 45, 46 and 54.

Therefore, since Bruno fails to disclose, or even suggest, all of the elements of independent claims 1, 23, 45, 46 and 54, these claims are allowable.

Claims 2-5, 8-14 and 16-18 and 22 depend from claim 1. Claims 24-27, 30-36, 38-40 and 44 depend from claim 23. Claims 47-53 depend from claim 46. Claims 55-61 depend from claim 54. As discussed above, claims 1, 23, 46 and 54 are allowable. For at least this reason, and the features recited therein, claims 2-5, 8-14, 16-18, 22, 24-27, 30-36, 38-40, 44, 47-53 and 55-61 are also allowable.

Since claims 6-7, 15, 28-29 and 37 have been canceled, the rejection of these claims is rendered moot.

For at least the reasons above, reconsideration and withdrawal of the rejection of claims 1-18, 22-40, 44-61 under 35 U.S.C. §102 are respectfully requested.

5. Rejections Under 35 U.S.C. §103

Claims 19-21 and 41-43 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bruno in view of Acharya et al. (hereafter Acharya), U.S. Patent No. 6,477,534. Applicants respectfully traverse this rejection for at least the following reasons.

As discussed above, Bruno fails to disclose, or even suggest, each and every element of independent claims 1 and 23. Acharya et al. fails to cure this defect in Bruno.

Acharya et al. discloses a technique that generates approximate answers in a data warehouse environment in response to complex aggregate queries based on statistical summaries of the full data of a database (see col. 5, lines 39-42). However, Acharya et al. fails to disclose or suggest at least the elements of storing in memory either a second or third estimated

selectivity value of the query based on whether the query is separable, as included in independent claims 1 and 23. Additionally, Acharya et al. fails to disclose or suggest the elements of determining whether a first estimated selectivity value of the query is stored and returning the stored first estimated selectivity value to approximate the number of tuples returned by the query, as included in independent claims 1 and 23. Furthermore, Acharya et al. fails to disclose or suggest the elements of atomically decomposing the query selectivity to form a product that comprises a conditional selectivity expression, wherein the atomically decomposing step is repeated to produce a plurality of alternative products that comprise corresponding conditional selectivity expressions; for each of the plurality of alternative products, matching a corresponding conditional selectivity expression with stored statistics to obtain statistics that can estimate a selectivity value of the conditional selectivity expression and using the statistics to obtain an estimated selectivity value of the conditional selectivity expression; and combining the estimated selectivity values of the conditional selectivity expressions corresponding to each alternative product to determine a third estimated selectivity value of the query, as included in independent claims 1 and 23.

Therefore, since Bruno and Acharya et al., alone or in combination, fail to disclose or suggest all of the elements of claims 1 and 23, these claims are allowable.

Claims 19-21 depend from independent claim 1. Claims 41-43 depend from independent claim 23. As discussed above, claims 1 and 23 are allowable. For at least this reason, and the additional features recited therein, claims 19-21 and 41-43 are also allowable.

For at least the reasons above, reconsideration and withdrawal of the rejection of claims 19-21 and 41-43 under 35 U.S.C. §103 are respectfully requested.

6. Conclusion

Accordingly, in view of the above amendment and remarks it is submitted that the claims are patentably distinct over the prior art and that all the rejections to the claims have been

overcome. Reconsideration and reexamination of the present application is requested. Based on the foregoing, applicants respectfully request that the pending claims be allowed, and that a timely Notice of Allowance be issued in this case. If the Examiner believes, after this amendment, that the application is not in condition for allowance, the Examiner is requested to call the applicants' attorney at the telephone number listed below.

If this response is not considered timely filed and if a request for an extension of time is otherwise absent, applicants hereby request any necessary extension of time. If there is a fee occasioned by this response, including an extension fee that is not covered by an enclosed check please charge any deficiency to Deposit Account No. 50-0463.

Respectfully submitted,

Microsoft Corporation

Date: April 10, 2007

By: /Sung T. Kim/

Sung T. Kim, Reg. No.: 45,398
Attorney for Applicants
Direct telephone: (703) 647-6574
Microsoft Corporation
One Microsoft Way
Redmond WA 98052-6399

CERTIFICATE OF MAILING OR TRANSMISSION [37 CFR 1.8(a)]

I hereby certify that this correspondence is being electronically deposited with the USPTO via EFS-Web on the date shown below:

April 10, 2007
Date

/ Rimma N. Oks /
Signature

Rimma N. Oks
Type or Print Name